

ORAL HISTORY INTERVIEW

E. Richard Klinke



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Interview Conducted by:
George Petershagen
Historian
Bureau of Reclamation



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Editorial Convention

A note on editorial conventions. In the text of these interviews, information in parentheses, (), is actually on the tape. Information in brackets, [], has been added to the tape either by the editor to clarify meaning or at the request of the interviewee in order to correct, enlarge, or clarify the interview as it was originally spoken. Words have sometimes been struck out by editor or interviewee in order to clarify meaning or eliminate repetition. In the case of strikeouts, that material has been printed at 50% density to aid in reading the interviews but assuring that the struckout material is readable.

The transcriber and editor also have removed some extraneous words such as false starts and repetitions without indicating their removal. The meaning of the interview has not been changed by this editing.

While we attempt to conform to most standard academic rules of usage (see *The Chicago Manual of Style*), we do not conform to those standards in this interview for individual's titles which then would only be capitalized in the text when they are specifically used as a title connected to a name, e.g., "Secretary of the Interior Gale Norton" as opposed to "Gale Norton, the secretary of the interior;" or "Commissioner John Keys" as opposed to "the commissioner, who was John Keys at the time." The convention in the Federal government is to capitalize titles always. Likewise formal titles of acts and offices are capitalized but abbreviated usages are not, e.g., Division of Planning as opposed to "planning;" the Reclamation Projects Authorization and Adjustment Act of 1992, as opposed to "the 1992 act."

The convention with acronyms is that if they are pronounced as a word then they are treated as if they are a word. If they are spelled out by the speaker then they have a hyphen between each letter. An example is the Agency for International Development's acronym: said as a word, it appears as AID but spelled out it appears as A-I-D; another example is the acronym for State Historic Preservation Officer: SHPO when said as a word, but S-H-P-O when spelled out.

Introduction

In 1988, Reclamation created a History Program. While headquartered in Denver, the History Program was developed as a bureau-wide program.

One component of Reclamation's History Program is its oral history activity. The primary objectives of Reclamation's oral history activities are: preservation of historical data not normally available through Reclamation records (supplementing already available data on the whole range of Reclamation's history); making the preserved data available to researchers inside and outside Reclamation.

Questions, comments, and suggestions may be addressed to:

Andrew H. Gahan
Historian
Environmental Compliance Division (84-53000)
Policy and Administration
Bureau of Reclamation
P. O. Box 25007
Denver, Colorado 80225-0007

For additional information about Reclamation's history program see:
www.usbr.gov/history

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**Oral History Interview
E. Richard Klinke**

Petershagen: This George Petershagen conducting an interview of Dick Klinke on behalf of the Bureau of Reclamation. We're in the Klinke residence in Sacramento. Today is July 22, 1994, and this is Tape 1, Side A. Mr. Klinke retired from the Bureau of Reclamation with the title of Chief of Power O&M, [operations & maintenance] and we'll discuss what that means later in the tape.

Before we begin with the real questions, Dick, if you would please acknowledge for me on the tape that you understand that this is being tape recorded.

Klinke: Yes, I understand that.

Petershagen: And you understand that this interview becomes the property of the United States Government.

Klinke: Yes, I understand.

Petershagen: Let's start out then with your birth. Where and when were you born?

Early Life

Klinke: Well, I was born in San Francisco on June 24, 1924.

Petershagen: And you were raised in San Francisco?

Klinke: No, my parents moved to Sacramento when I was about two years old, so I consider myself a more native Sacramentan than San Franciscan.

Petershagen: So you went to Sacramento schools?

Klinke: Yes.

- Petershagen: And what high school did you graduate from?
- Klinke: McClatchy High School here in Sacramento.
- Petershagen: I see. And what year would that have been?
- Klinke: June of 1942.
- Petershagen: So just shortly after Pearl Harbor, the first graduating class, I guess, from McClatchy after Pearl Harbor. Did you go in the service immediately then upon graduation?
- Klinke: I enlisted in the Navy in September 1942.
- Petershagen: I see, and what did the Navy do with you?
- Klinke: I went into their program to develop and train radio technicians and to serve aboard ships or cover airborne facilities. And I elected to go with the shipboard facilities. And they trained me to operate and maintain radio transmitters, receivers, sonar, radar—equipment that would be found aboard ships.
- Petershagen: And what ship did you serve on?
- Klinke: I served on the *USS Dempsey*, the D-E-26, which was commissioned out of Mare Island in Vallejo, California.
- Petershagen: So you were there as part of the commissioning crew?
- Klinke: Yes.
- Petershagen: I see. And then was that your only ship during the Second World War?
- Klinke: I was later transferred, after the D-E had come back from overseas in July of 1945, I was assigned temporarily to *USS Norris*, D-

E-859, and just served a few months on there before I was discharged January 1, 1946.

Petershagen: Probably a pretty happy New Year's, then, at the time?

Klinke: I had sufficient points to be discharged, and I was afraid that I might end up over in Japan, doing patrol duty, while all the others were coming back from overseas. But I was fortunate (Laughter) enough to get off.

Petershagen: And by the time you were discharged had you made your mind up as to what the future might hold? You knew you were going to go on to college?

Desire to be an Electrical Engineer

Klinke: Yes, even in my high school days, I had planned to go to U-C-Berkeley [University of California], and so I was discharged January 1, 1946, and I started school at U-C-Berkeley in February 1946. In those days you could start in mid-semester. So I completed my baccalaureate degree in June of 1949, as an electrical engineer.

Petershagen: Okay, thank you. Obviously, with your expressed desire to pursue electronics in the Navy, and following on that with a degree in "double E," it sounds like you had some interest in electronics before you joined the Navy?

Klinke: Yes, I had always wanted to be an electrical engineer, even in my young days. So I had already set this as my goal. And so one of the reasons I joined the Navy in the program that I did was specifically to get more knowledge and understanding of electronic equipment.

Petershagen: But when you went to Berkeley was there any thought of the Bureau of Reclamation in your future?

Klinke: None whatsoever. I had never heard of the Bureau of Reclamation.

Joining the Bureau of Reclamation

Petershagen: When did the Bureau come into your life, and how

Klinke: Well, rather strangely, in a way, because I came to Sacramento seeking various employments, be it federal, state, or otherwise. And I had preferred to live in Sacramento or San Diego, were my two choices. A friend of mine who worked for the Corps of Engineers at that time brought my attention to the Bureau of Reclamation and said they were starting to construct various power facilities and so on in California, and there may be an opportunity to go to work there. So that's when I walked into then what was called the Branch of Power Utilization, on Thirteenth and "J" in Sacramento, and was interviewed by the assistant power manager. And it was just at that time they were looking for someone to spearhead the planning and development of a communication system that would cover the Sacramento and San Joaquin valleys, where the Bureau would have various water and power features constructed and operating. And so with my Navy experience and my college background, they felt I was capable of doing that. And that's when I spent the next year of my employment with the Bureau, planning and developing this communication system that covered basically the Central Valley Project.

Petershagen: And who was it that hired you for the Bureau?

Klinke: I can't think of his name. I worked for a fellow who then headed up the O&M Division, Cal Davis. And he had under him Ralph Sedgewick was his name. And so I worked with those gentlemen as my supervisors in those days.

Petershagen: In those days, what was it like to work for the Bureau. I mean by that, did everybody come to work at the same time, go home at the same time, fairly regimented?

Klinke: I'd say in those days, the Branch of Power Utilization—and I might also add, in another part of Sacramento in those days was Design and Construction. They had offices spread all over Sacramento, as a matter of fact. But the Branch of Power Utilization had the functions of resource planning and development, O&M, and marketing and sales. Most of those people had come down from Bonneville Power Administration and consequently they were regimented along the lines of whatever Bonneville promoted in those days in terms of management styles. And I'd say it was a very regimented organization. The fact that there was a lot of ex-military people involved almost gave it a military flavor.

Petershagen: I can see how that might be. You, though, were establishing this communication system, or designing this communication system, that I'm sure took you out of the office a lot.

Building CVP Communication System

Klinke: Oh, much so, yeah. What I did was, since I was dealing with what they called V-H-F or very high frequency range of the radio spectrum, they had what they termed "line of sight" transmission. So in order to communicate point-to-point, or from a high

point such as a mountaintop down to a mobile radio in the valley, essentially you had to have line of sight. So a lot of the time was spent in the office doing office engineering with what they called "U-S-G-S quadrangles," which showed the contour of the earth. And I had a couple of technicians in those days assisting me on this, where we'd develop line of sight profiles between a possible repeater site location, and where we wanted to communicate. And we literally made thousands of these profiles from these quadrangle maps. To ensure ourselves that we weren't—before we went out in the field and selected repeater sites—that it was a feasible location to begin with

And then we'd have to make reconnaissance out in the field on these mountaintops to find out, one, does it have power already? Two, does it have roads already? In other words, we wanted to keep the development costs of the repeater sites down so we didn't have to put a lot of money into roads and power and so on. That was a design objective. And so that was the process that was used to develop these sites.

And then I had a Jeep that was equipped with a mobile radio unit, and I'd station that Jeep up on a mountaintop somewhere that we were investigating. And then I would travel the valley around the various features, water and power features, talking to this person up in the Jeep, keeping a log of our signal strengths and locations and so on, and we did this from numerous sites. And it was not unusual for me to travel 300-400 miles a day.

Petershagen: Out of a year, at that time, let's say, how many days do you think you spent traveling?

Or let's just say out of a typical work week if that's even manageable.

Klinke: Well, I'd travel five days a week, at least, if not more sometimes. And I think in a year's time—I had this one 1948 Ford sedan—and my recollection is that I put on over 50,000 miles in that one car in one year, which is quite a bit. So I didn't stay in one spot too long.

Petershagen: You must have become somewhat of an expert on California geography and topography by this experience.

Klinke: Exactly, I certainly did.

Working for Reclamation

Petershagen: It would seem, working that way, as well as a relative newcomer to the Bureau and this group of people that you were working with, that it would be hard to get to know people and even establish yourself. And then when you add to it the offices were here and there around Sacramento, it would seem like perhaps that time period in the late '40s and early '50s, that it was much harder to get to know your fellow workers in the Bureau.

Klinke: You know, quite the contrary. This assignment that I had really forced me (Chuckles) to seek information from all levels of management at all locations. For example, in those days we had district offices. We had a district office in Chico. We had one in Stockton. And they were mainly carrying on the construction of various features at that time. I took it upon myself to talk to the regional staff here in Sacramento, including the director, to get their ideas on future projects: Where they're going to be located. What's their feeling on how things were going to be operated and

maintained? Where were they going to have operating offices located—you know, field offices, as opposed to the regional headquarters in Sacramento? So that took me out to all the district offices. I talked to the district managers and their staff or whoever might shed some information on future operations and locations. I went down to Stockton, down in Fresno, and things were just under construction in those days. Based on my contacts, I got to know just about the whole regional Bureau staff in California by virtue of that one assignment.

Petershagen: Was there a particular individual in a district office or in any sort of a field office that you considered your primary point of contact?

Klinke: Well, I used to go right to the top. I'd go right to the district manager and say, "Here's what I am trying to achieve," and seek out information from him, or he could refer me to any one or more of his staff that I might talk to. But I found that was the best way to get the information that I needed, was to start from the top (Chuckles) and work down.

Petershagen: Now, how long did this communication system remain in use? Is it still in operation today?

Klinke: It still is. The repeater sites that were located in 1949 are the same ones that are in use today. Of course some of the equipment is not the same equipment, because it's been changed out and modernized, of course. But the same needs are being met today as they were back in 1950 or thereabouts.

Petershagen: Let's leave the Bureau for just a minute. Dick Klinke, former sailor, electrical engineer, somehow you became associated

with the Air Force. Tell us a little bit about that. How did that come about?

Air Force Reserve

Klinke: Well, after I had completed my communication project, in 1949, 1950, and after I had . . . Organizationally, I had been reassigned under a fellow by the name of George Anthony and Art Woods. George Anthony was a Reserve Lieutenant Colonel in the Air Force, and he approached me one day asking if I'd be interested in getting an appointment as a Second Lieutenant in communications. He needed a Communications Officer in his Unit. So I accepted that and received a direct appointment as a Second Lieutenant in 1950. The type of unit that was involved was an aircraft control and warning squadron, which is basically a radar and communications unit. So my background suited me rather well for that kind of assignment.

In the meantime, the Korean War started, and I was activated as part of the California Air National Guard, and spent two years on active duty during the Korean incident, after which I was released, came back to Sacramento, picked up my work with George Anthony and Art Woods with the Bureau, but I also maintained my relationship with the California Air National Guard. I retired from the California Air National Guard in 1968 as a Lieutenant Colonel, and my last assignment was that of a Unit Commander of a communications squadron here in Sacramento.

Petershagen: What was your initial reaction when you found out that you were being called up for the Korean War?

Klinke: Well, my *initial* reaction was, I didn't really look forward to being interrupted in my civilian pursuits, because I had just gotten out of the Navy, and after a period of three-and-a-half years, spent four years going to college, and I already felt that I had some time to catch up on, because I had spent my time in the military and was somewhat (Chuckles) waylaid, where I couldn't follow my civilian pursuits for some period. So I was very conscious of time in those days, that I had a lot of catch-up to do. So I really didn't look forward to another two years in the military, but that was the oath that I took and the obligation that I took, and so I accepted it. Then having done that, I decided I'd spend my twenty years in the military, which I did.

Petershagen: You made, as did a lot of people at the same time, I'm sure, then you made a conscious decision that they may not like these interruptions in your civilian career, but you were ready to face going to war, if they came along.

Klinke: If my country needed that kind of support, I was willing to provide it.

Petershagen: Okay, then when you came back to the United States and you were released from active duty, you went back to work at the Bureau. What sort of assignments did you have then when you returned to work?

California Projects Office

Klinke: Well, as I mentioned, I went back to work for George Anthony, who was then in what they called the California Projects Office under Martin H. Blote. Martin was at that time considered in charge of all the operation of the Central Valley Project features, water and power. And under him,

he had a Watermaster who was then Jake Ossofsky,¹ and he had a power man who was then George Anthony. It was a very *small* organization by comparison to what we see today. George Anthony was the head of the power group; Art Woods was his second in command, electrical engineer, and the person that I worked for at this time. And there was another gentleman, Charles Maservy, who's a former P-G&E [Pacific Gas and Electric Co.] dispatcher, who was in charge of the power control group. It was through that activity that I expanded my horizons from communications to power. Up to this time in my career, I had focused primarily in communications. But when I went to work for Art Woods, he was a power engineer who went to the University of Tennessee, co-oped at T-V-A [Tennessee Valley Authority] and was a very strong, power-oriented engineer. And it was through him that I consider myself having received a master's degree in power work. And I became, I consider myself, an expert in power system protection work, power system operation, as well as being involved in power system maintenance of hydroelectric and transmission facilities.

Petershagen: And when you say you consider it was through *him* that you received what you consider a "master's degree"—I should put quotes around "master's degree"?

Klinke: Yes.

¹ Jake Ossofsky participated in Reclamation's oral history program. See, Jake Ossofsky, *Oral History Interview*, Transcript of tape-recorded Bureau of Reclamation Oral History Interview conducted by George Petershagen, Historian, Bureau of Reclamation, May 18, 1994, edited by George Petershagen, further edited and desktop published by Andrew H. Gahan, 2017, www.usbr.gov/history/oralhist.html.

Petershagen: You didn't go back to school (Klinke: No, not formally.) and actually receive a degree?

Klinke: That's right.

Petershagen: Now, in conjunction with all that, it sounds like you must have had to reach a decision at some point that if I want to continue in a communications specialty, I'm going to have to look for a different employer. Or if I want to keep working for the Bureau of Reclamation, I'm going to have to shunt aside communications a little bit and get involved in more traditional Bureau kinds of things. Is that a fair statement of how things went?

Klinke: Yes, very much so, because I could see that being a communications specialist was very limited in terms of future activities. And I wanted to be able to expand my horizons to the point where I could become, in future years, a manager somewhere in the Bureau's organization.

Petershagen: So you were fairly sold on the Bureau as far as a place to work and the kind of work that it offered. What other things might have affected that decision? The people you worked for, for example

Klinke: Yes, the people. As I mentioned, George Anthony and Art Woods were extremely knowledgeable in power operations and engineering. George Anthony had worked for P-G&E, and he had an excellent background in operations. So it's really through them and Charlie Maservy, who was a dispatcher, that I started learning more about power operations and power engineering. And I knew that that would lead me down a track where I could, in the future, be able to accept more responsible positions.

Petershagen: And as a young man, starting a Bureau career, what did the future look like to you? In hindsight, to me, it looks like a very exciting time to work for the Bureau of Reclamation.

1950s an Exciting Time to Work in Reclamation

Klinke: Extremely so. See, when I went to work, the major feature that had just been built was Shasta Dam and Powerplant.² Two of the main units that were supposed to be installed in Shasta were temporarily, during the war, installed up at Grand Coulee. Ultimately there would be five major units installed in that powerplant, plus two station service units. Then Keswick [Dam]³ was just under construction. Folsom [Dam]⁴ didn't start construction until sometime in the early '50s. Tracy Pumping Plant didn't start under construction until the early '50s. So all of these things were starting to come about in the period 1950 on. So it was an extremely exciting time in the Bureau—not only because of the construction activity, but

² Shasta Dam is located about nine miles northwest of Redding, California, on the Sacramento River. Built during the seven-year period between 1938 and 1945, the dam is a 602-foot-high concrete gravity dam, which provides flood control, power, and water supply benefits. For more information, see Eric A. Stene, "Shasta Division Central Valley Project," Denver: Bureau of Reclamation History Program, 1996, www.usbr.gov/projects/pdf.php?id=107.

³ Keswick Dam is a 157-foot-high concrete gravity dam, with a crest length of 1,046 feet, constructed 9 miles downstream from Shasta Dam on the Sacramento River. Keswick Dam acts as an afterbay dam controlling river fluctuations from the Shasta Powerplant.

⁴ Completed in 1956 by the U.S. Army Corps of Engineers, flood damage reduction is the authorized purpose for Folsom Dam and Reservoir. The project is operated by Bureau of Reclamation as part of the Central Valley Project, serving water supply demands in the state of California. Additionally, Folsom Dam and Reservoir produces hydroelectricity, helps to maintain water quality in the Bay Delta, provides recreation and water for local municipal agencies.

as these features *were* constructed, they had to be integrated into an operating system. And that's where I was *really* taken up, because the group that I was with—George Anthony and Art Woods—we were tasked specifically to do that. And so we had to provide whatever engineering was needed to integrate Shasta Powerplant, Keswick Powerplant, the transmission lines, the interconnections with P-G&E which took us into the area of contract negotiations.

Petershagen: I'm going to have to interrupt you right there to turn this tape over, I'm sorry. We'll pick this up in a sec.

END OF SIDE A, TAPE 1.
BEGINNING OF SIDE B, TAPE 1.

Petershagen: Dick, on the other side of the tape we were talking about what you saw as kind of the present and future of the Bureau when you went to work with it. Would you care to continue with that thought?

Issues with PG&E

Klinke: As I was mentioning, these were exciting times that I was involved with in the 1950s, '60s, and '70s, inasmuch as new features were coming on line. It was the responsibility of the office that I was with to integrate those into the operating systems, which took me down to P-G&E and dealing with their engineers, their managers; and it got me involved also in contract negotiations when we got to the point of developing a sale and interchange of power between P-G&E and the Bureau. My involvement was primarily in the technical arena. And it was focusing primarily on the physical and electrical connections that would be made, how to account for system losses between the Bureau's system and the

P-G&E system—and this was an *extremely* sensitive issue with P-G&E. Also, to ensure that the Bureau had proper reactive support, in order to handle and introduce the generation of power into the P-G&E system. This was another extremely sensitive issue with P-G&E and the Bureau.

Petershagen: What do you mean by "reactive support"?

Reactive Support

Klinke: When you operate a power system, in the vernacular of electrical engineering, you have what they call "real power," which is the watts that you see burning in your lights, and "reactive power," which is the thing that's needed to hold up the proper voltage and allow you to transmit real power to a given location. Why it's so sensitive is, when you have a generator that's rated, say 100 mva [megavolt-amps], and maybe has a ninety percent power factor, in effect that says you've got ninety megawatts of real power, but you can support that with ten megabars of reactive power. That's what the unit was designed for. *However*, it's possible to operate that generator at unity power factor, and generate a *hundred* megawatts, instead of ninety, and forego the generation of reactive. Well, what happens in the real power system is, if you did that, that causes a sag in the voltage. That reactive support has to come from somewhere.

Well, if you're interconnected with P-G&E, that reactive support has to come from them, which means *they* have to generate reactive power, they have to invest dollars to make that operation real. Well, obviously, you can see that P-G&E, or *any* utility, isn't going to be willing to hand over that kind of money in support of *your* operations at their

expense. So there had to be some system studies made that would set some ground rules on how these generators should be operated to meet certain criteria of reactive and real power in the power system.

Early Computer Usage

That took me into power system study work. And then when I started, it was using an analog computer, per se, in Denver. They had a board set up that you could set up a power system, synthesize it, and run studies under various conditions in the power system. So that, as I say, took me into system analysis work. And I went back and forth to Denver many times, running those kinds of studies. And also when you bring new transmission on to handle your new generation, there had to be system studies made on how you would integrate and what kinds of lines you'd have where, for what purpose. So I did an awful lot of system study work in those days, back in Denver.

And I used to work with Ralph Goodrich who was then a very knowledgeable system study man on the Chief Engineer's staff back there. And then when analog gave way to digital, they developed some capabilities back in Denver to run these studies on a digital computer, as opposed to the old analog computers that they had.

About that time in 1954 I went up to Bonneville. They had done a lot of computer work, system analysis work. They were *the* leader at that point in time, and they were using I-B-M 650s. And I went up there and got their card decks on short circuit studies for running power system protection studies and got their decks on system study work so that they could

synthesize the power system and look at conditions in the power system using the digital computer. And I brought those decks down here, and the Bureau didn't have any computer of its own, but I went over to the State Department of Highways and rented time on *their* I-B-M 650 to do system study work, and that was our first effort here in this region to use computers in support of system study work.

Petershagen: And the Highway Department computer at the time was in the Headquarters Building at 1120 "N" Street, across from the capitol?

Klinke: Yeah, it was downtown. I've forgotten the office now. It was one of the state offices downtown in Sacramento. So we used to have to go down there and take our decks and put them in the hopper and run studies. And it worked out—for the situation there—it worked out well.

Petershagen: Interesting. Now, if I could go back to a thought I was on earlier, more along the lines of your personal thoughts: As much as this was an exciting time in the development of the Bureau, at that same period it was kind of an exciting time in communications, too—television coming on and things like that. Were there times when you thought that maybe you might want to get involved in that rather than this power generation stuff?

Developing Electronic Systems

Klinke: Well, I never did give up my interest in communications and electronics—as a matter of fact, quite the contrary. I did carry on those activities along with my power activities in this period that I was referring to. As an example, I assisted Denver Lab in designing and installing salinity recorders

down in the Delta where there was a mandate under the state law that you had to maintain a certain salinity level, and consequently, water releases to meet those levels down in the Delta. And in order to measure that, we had to install, oh, it was fifteen or twenty stations throughout the Delta that would record salinity levels. That was an electronic device that was used for that purpose.

Another system that I got involved with out of the Denver labs was a radio-reporting rain gauge, where in order to track water flow after heavy rains up in the Sacramento Valley. There was an attempt by the water people to correlate rainfall measurements up in the watershed areas, to outflow down on the Sacramento River, in the hopes that they could predict flood situations. I was involved in the design and development of the electronics for those reporting rain gauges and also locating the stations so that they could report radio-wise into the system and get the information down here.

I designed what I called an alarm station down on the Friant-Kern Canal,⁵ where if the levels on each side of a check became out of limits, then there would be a radio signal sent out which would alert the ditch riders, that "hey, something's not going right at certain checkpoints along the canal." And they could go there and determine what the

⁵ Part of the Friant Division of the Central Valley Project, construction of the Friant-Kern Canal began in 1945 and was completed in 1951. The canal carries water more than 151.8 miles in a southerly direction from Millerton Lake to the Kern River, near Bakersfield. The water is used for supplemental and new irrigation supplies in Fresno, Tulare and Kern counties. For more information, see Robert Autobee, "Friant Division Central Valley Project," Denver: Bureau of Reclamation History Program, 1994, www.usbr.gov/projects/pdf.php?id=103.

problem might be. That was an electronic device. So I kind of kept my finger (Chuckles) in the pie, as well as doing my other power work.

And later on, of course, we tried to put in a microwave system. In those days, there was, I felt, a rather strong lobby in Washington by the telephone company that would do whatever was necessary to try to prevent putting microwave in these areas because they were afraid that it would become a common carrier for other agencies and other purposes in obvious competition with toll service in the telephone system. So we didn't get too far putting in microwave in California (Chuckles) until later when WAPA [Western Area Power Administration] came in—this was in the early '80s—and then finally there was a microwave installed.

But up until then, we didn't have much success in the way of putting microwave in. So I was forced to use power line communications, in other words, power line carrier. We'd use multi-line power line carrier for meeting our data communication needs as well as voice communications within the power system area. That is, between Shasta [Dam] and Sacramento. I planned and designed a centralized computer control system that is operating today at Cottage Way that controls all the hydroelectric system and the transmission system out of Sacramento. This was before WAPA. That was a *tremendous*, major undertaking. I had no idea how large it was until I got into it.

Petershagen: And about when was that, that you started on it?

Western Area Power Administration

Klinke: As I remember, 1975. The spec was written, and what it involved was installing something that had never been done anywhere—in the Bureau or in the world—installing computers in the harsh environment of a powerplant, interfacing those computers with the in-plant control system. So that instead of hard wire control, you'd have computer command controls going to the generators in the plant and the auxiliaries and what have you. You had to design the interface between the plant system and the communication system, and I developed what I called an interface panel, where we brought all the plant wiring on one side, and the computer wiring on the other.

It was an absolutely tremendous undertaking, because all of this work had to be done by force account—in other words, Bureau electricians, technicians, and so on. Also, we had to make the design drawings, and then update all the drawings after the construction phase was completed, so that the people that were operating and maintaining would have up-to-date drawings. You're blind in the electrical business if you don't have up-to-date drawings. That job was finished in 1979. It took just about four years to get those installed.

As I say, then WAPA came in in '77. Then things *really* got confused, because the issue was, "Who owns what? and who operates what?" in a system that had been integrated from day one and never envisioned that kind of separation. And so what do you do, and how do you do it? And I'm telling you, that gave me a lot of

heartburn over several, actually, years while this process was going on.

Petershagen: Sounds really simple: You just set down with an organization chart and you say, "Well, we need to move these positions over to this new organization." But from your standpoint, you were involved in this computerization effort . . .

Klinke: As well as the overall operation and maintenance of switchyards, powerplants, substations.

Petershagen: It must have looked like the end of the world when you first heard about it.

Klinke: Oh yeah! Oh yeah, I went back to several meetings in Denver when this thing was first coming about. And then we didn't get any words of wisdom or help from that score, and they said, "Well, just go back and negotiate it with the WAPA people," which is what we had to do. You get personalities involved. You get feelings involved that really didn't have any—sometimes to me—made any logic or sense out of what was being proposed. No engineering reasons why it should be proposed the way it was being proposed. (Chuckles) This thing went on and on, and that, for me, was the end of the Bureau of Reclamation.

Petershagen: I see. How did other people around you react to it when you started hearing about all the changes that were going to come about? And, of course, I'm sure when you first heard about the changes, some of them happened the way they were announced, and some of them didn't, and some happened, but you didn't expect them and so forth. Pretty big upset for everybody that worked around you?

Klinke: Oh, certainly! Well, I don't want to get into personalities and details, but suffice to say it was an extremely uncomfortable situation for a lot of people.

Petershagen: I'm sure there were those that probably saw it as an opportunity, and probably just as many or more that saw perhaps the end of their careers in this thing, really fearful.

Klinke: If I had an opportunity—I was asked, "Do you want to stay with the Bureau, or do you want to go with WAPA?" I chose to stay with the Bureau, because my roots were with the Bureau. And I had this computer system that was still, at that time, still being installed and the transition, all the effort that was going into that, I couldn't see dumping . . . I mean, I was the one, the lead person in all of this. And I couldn't see just stopping that and taking all my people and going over to WAPA. It just couldn't be . . . Somebody had to stay with the system. (Chuckles) So I felt that that was my obligation, because I had taken it on. I could have had other opportunities had I gone into WAPA because of my background, and done maybe other things from a management standpoint, but I have no regrets whatsoever.

Petershagen: You anticipated my next question. There were never any second thoughts at all?

Klinke: No. No, I enjoyed all the time that I was with the Bureau. However, as I say, when this WAPA thing came, and I could see the handwriting on the wall, where things were heading, I figured that would complete my time with the Bureau. And I was reaching a time that I was eligible for retirement, and I had always anticipated that when that time came, I would retire from the government and go out into the world and seek my

employment otherwise because I wasn't ready to quit work. It couldn't have come at a better time, because in 1981 I was approached by the Manager of Engineering over at SMUD [Sacramento Municipal Utility District.

Project Manager for SMUD

They had all kinds of problems with their supervisory control system. It was too small to do what they intended. It was obsolete. They were bringing stations on-line with nothing to control them with. They were in a real dilemma. He had interviewed, oh, probably two dozen people to take over the responsibility for upgrading and installing what is termed in the power vernacular an energy management system, which is a computer-based system that controls and monitors the electric system.

As I say, that opportunity occurred in '81, so that's when I said, "I'm going to pull the plug with the Bureau and retire. I had thirty-two years with the Bureau, they were good years, but now I'm ready to do something else." And at that point I was hired by SMUD as the project manager.

Petershagen: So you were a SMUD employee, not a contractor.

Klinke: That's right. I went over there as the project manager, as their employee, to plan and design and install an energy management system. That I did and completed in an eight-year period. It was a \$10 million control system, and there had to be a new building, operations center designed and built. And I was intimately involved in the design and construction of that building, where the system now resides, and where the dispatchers are located. And it's a large

operations center, is typically utility, if you walked into it, saw the vertical map boards and all the C-R-Ts and so on sitting around the floor. So it was about a \$20 million investment. And as I say, that job was completed in '89, and I figured after forty years that was enough, and I'd go play golf. (Chuckles)

Petershagen: So that's the decision you made, as you put it, "to play golf"? You didn't do any consulting work or anything like that after SMUD?

Klinke: I had opportunities to, yes, very definitely.

Petershagen: I'm sure you did!

Klinke: I had control system consultants after me to go to work for them. They kept saying, "Well, you only have to work two or three days a week—make your own time, your own schedule." And I'm not the kind of person that can go in there two or three days a week. I'm either in there all or nothing. And I knew I'd get caught up into a normal work schedule. So I said, "Thanks, but no thanks. I'm going to enjoy my retirement."

Petershagen: As you were describing the control system that you put together for SMUD, a couple of points: one, I heard in your voice, and I think I saw on your face, an expression of pride in what you accomplished there.

Klinke: Oh, most certainly, yeah.

Petershagen: The second thing is, that's the system that's there today, that's really SMUD's control system. (Klinke: That's right.) And a third thing is, you described it as . . . You said that in talking with SMUD managers about working for them, you used the terms "problems with their supervisory control

system." So tell us for a minute what a supervisory control system [is]. What does that mean to me?

Supervisory Control System

Klinke: Well, it's a less sophisticated energy management system type of thing. In other words, years ago, if you wanted to in the power system control, say the operation of breakers in a substation, which is the most common application, you'd have a central operating point. You'd have a communication media to the point that you're going to control, and you'd send through this panel. In those days, it was electro-mechanical as opposed to a C-R-T. You'd send commands "open-close" commands via the communication to the substation, as an example, and it was pretty straightforward. And the dispatchers would use that in their daily operation. You could also control generators, raise and lower voltage, raise and lower power, open-close breakers, those kinds of simple commands. And the dispatchers, as I say, used those out of their central dispatch, so that they could operate the system. It was pretty straightforward, electro-mechanical devices.

In today's world with electronics, computers, you have much more sophisticated application programs that can assist the dispatcher in making decisions as well as more information displays. It gets more information than certainly just a little red or green light on a board that says the breaker's open or closed. And it's these application programs and the computers associated with them that, of course, make the systems large and expensive, and there's a lot of software that has to go into that. So over at SMUD, I started out with just myself . . .

Petershagen: I'm going to have to interrupt you here, I'm sorry. We'll come back to that when I put a new tape in.

END OF SIDE B, TAPE 1.
BEGINNING OF SIDE A, TAPE 2.

Petershagen: Dick, as we finished that last tape, you were talking about control systems. Is there anything that you need to add to that?

Keeping Up to Date with New Concepts

Klinke: Well, I was in the process of mentioning that I went over to SMUD as I mentioned, just by myself, and then I had to develop a staff of hardware engineers and software people that would accommodate the future operation of the system. And so that evolved over a period of time, dealing with the contractor. In this case, it was Control Data Corporation in Minneapolis, and they were the main contractor for the system. And so we had to go through a lot of training and development of software to accommodate SMUD's needs. And we went through a similar situation with the Bureau's central system. Having gone through that system with the Bureau, it made it somewhat easier when I went over to SMUD.

Petershagen: Whatever mistakes were to be made you had already been through once, huh? (Chuckles)

Klinke: Yeah.

Petershagen: In bringing new concepts, new equipment into the Bureau—I guess the simple way to ask the question is—how did you find out about it? Most of the Bureau of Reclamation's R&D [research and development] and so forth, as I understand it, is in Denver, correct?

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- Klinke: Well, that's the central engineering point for the Bureau, yes.
- Petershagen: But you had, I'm sure, a good deal of freedom to design the systems that were necessary for the Central Valley Project, whatever California required. It wasn't mandated by Denver.
- Klinke: No. And that was one of the things I prided myself with over the many years since I finished college. I never did believe in the fact that you go to college and that you learn everything that you need to know in four years and then you stop learning—quite the contrary. And so I've always prided myself in being a very progressive individual. And in order to be progressive, you've got to keep up with the times. You've got to keep up with and know and understand what the state of the art is, and what can be provided out there, and over the years, be it a piece of communications equipment or power equipment or computers or what have you.

And so I made a conscious effort during my career to keep tabs with the outside world, and what was out there and what capabilities there were to facilitate some of the things that the Bureau was doing. And of course, I belong to the I-E-E-E, Institute of Electrical and Electronic Engineers, and I have always, through a lot of their publications, kept current. I've always taken a lot of trade magazines and literature, which, through advertisements and articles, tell you what's going on where, doing what. So that's kind of how I kept up. When I went through college, there was no such thing as a digital computer. I mean, they just weren't there yet. So through self-training, I learned about digital computers—the hardware as well as the software. And that's how I kept current and

was able to apply the things that I learned to my job.

Petershagen: Now, of course, in doing all this, you mentioned earlier doing studies in conjunction with Denver and having to travel back and forth to Denver, so I guess it's fair to say, if nothing else, they were a willing ally in your efforts. How were your working relationships with people in Denver?

Relationship With Denver

Klinke: I'd say, as a whole, very good. Through my frequent travel, I got to know people. Not only my counterparts in the O&M side of the business, but I got to know the design people there as well. Mainly because the things that were going out here in the Central Valley Project, design-wise, would cross my desk. And so there was many times where I'd have to, either by phone or travel back there in person, sit down and discuss various design matters, even though I'm in the O&M business. But as I say, I'm a two-hatted individual, and so I had to go back there, and I got acquainted with all of the electrical design staff back there and the communications people and people that we would have contact with out here. And so I got to know everybody on a first-name basis so we could pick up the phone anytime, if we've got a question or wanted to discuss this or that, I was able to do that. So I thought the relationship between my office and Denver was very good.

Petershagen: None of a sense of Denver being "big brother" looking over your shoulder all of the time?

Klinke: No. I did have a confrontation or two (Chuckles) over the years, where we had a

difference of opinion. But that's understood, that we don't always agree with somebody.

Petershagen: Right. How about other regions? You must have had a good deal of contact with your counterparts in other regions.

Klinke: Oh, yeah. Well, through the Denver Office there we'd have a little conclave of, say, all the Power O&M Managers from all the regions come in and we'd have an annual meeting, at best, to discuss mutual problems and situations, and those were good. Consequently, we got acquainted on a first-name basis with those people and we could pick up the phone and discuss whatever with them.

Petershagen: How about other agencies, the State Department of Water Resources, for example? I'm sure you couldn't get through your job (Klinke: Oh, definitely.) without considerable contact with them.

Relations with California Department of Water Resources

Klinke: Yeah, particularly, it came about primarily because of the joint facilities down in San Luis.⁶ Some of those down there—there's Dos Amigos, and what we used to call Mile Eighteen, and San Luis pump generating plant—were so-called joint facilities, joint state and federal. And

⁶ The San Luis Unit is part of both the federal Central Valley Project and the California State Water Project. Authorized by the San Luis Act in June 1960 (Public Law 86-488), it is jointly operated by the Bureau of Reclamation and the California Department of Water Resources. The principal purpose of the San Luis Unit is irrigation water supply for almost 1 million acres of prime farmland in central California. For more information, see Robert Autobee, "San Luis Unit West San Joaquin Division Central Valley Project," Denver: Bureau of Reclamation History Program, www.usbr.gov/projects/pdf.php?id=109.

consequently, I did an awful lot of consultation and work with the state resources people. As a matter of fact, they looked to me for a lot of advice and assistance because they were a relatively new organization and hadn't been involved in the operation and maintenance of large pumping and generating facilities and so on. So they looked to me and my staff for a lot of consultation. And so we got along quite well.

Petershagen: Did you lose people from your staff to the state over time?

Klinke: No. When the initial opening of the State Water Project occurred, of course, they were hiring everybody and anybody from all over, and some of our plant people, of course, went to work for them to maintain their facilities. But at that time our salaries and so forth were pretty competitive, so there was no dollar incentive, to speak of, to move over to the state.

Petershagen: So it'd almost have to be the one-time situation of a person finding a promotion or something like that if they were to even consider doing that.

Klinke: Right. And so I used to work with, as I say, the state people quite a bit. Which reminds me, a similar thing occurred with the Corps of Engineers on New Melones [Dam].⁷ When New Melones was being designed, the Corps came to us from Sacramento here and said, "Since you people are going to operate and maintain this, we'd like it to be

⁷ The U.S. Army Corps of Engineers began building New Melones in 1966, completing the dam in 1978 and the spillway and powerhouse in 1979; the Corps then transferred the project to the Bureau of Reclamation, becoming a feature of the Central Valley Project.

your kind of design. So I worked quite closely with the design people in the Northwest Division [of the Corps of Engineers], trying to expose them to what would normally be found, and the arrangements that would be found in a Bureau facility as opposed to a Corps of Engineers facility. So, I worked quite closely with the Corps people during the design and construction of New Melones. And then of course I worked with them integrating the New Melones generation into the power system. I did a lot of field work in testing as well. In other words, my time was not spent just in Sacramento. I spent a tremendous amount of time in the field doing testing on generators, turbines, inspection of those facilities, so that I was quite familiar with the field installation as well as what it looked like on paper.

Perceptions of Position Affects Working Relationships

Petershagen: Before we started the tape recorder, we had talked a little bit about how you perceived your position in the Bureau with regard to being both in-line management and in a staff function. And I'm not sure that a whole lot of people that worked here in Sacramento for the Bureau would feel that same sort of a relationship. You were somewhat unique in that regard. Would you care to talk about that a little bit?

Klinke: Well, as I mentioned earlier, it was kind of a two-hat situation. In one sense I was on the staff of the regional director, providing the oversight that is required by the Power O&M staff over facilities. Then on the other hand, I was giving direction to the operating and maintenance personnel, be it in the Dispatch Office or in the field, on the operation and maintenance of facilities. Each field office, of course, had a

superintendent. Within his organization, he had his own engineering and operating and maintenance staff. So, my people would interface with his people along similar lines, like my mechanical engineer would interface with their mechanical [engineer], dealing with turbine problems or pump problems or of that nature. And similarly with electrical.

So, we developed a rather close rapport with both the field group and the dispatch group. It wasn't that we were . . . I tried to purposely avoid the implication that we were telling them what to do and how to do it. I mean, they were directly responsible for the physical maintenance and operation of the facilities under their purview. And I recognized that. And so at some times it was a fine line, not to step over and give them the feeling that we were usurping their prerogative, and so that we didn't cross swords on issues. And so when those kinds of areas arose, we found common ground to deal with it, and not end up in a big flap. So those kinds of things could have happened, and in some cases did, on a one-to-one basis, but I tried my best to avoid them and reconcile those things when they did occur. It wasn't easy, I tell you!

Petershagen: No, (Laughs) I believe that!

Klinke: It wasn't easy. And then there were people in our own office that never did understand that, strangely enough. People on the regional staff, people in high places, to this day, I don't think ever really understood what was going on and why.

Petershagen: Sometimes the line between advice and orders can be a very fine one. I'm sure that was an exceptional challenge as far as the

management aspects of your career were concerned. (Klinke: That's right.)

Working with PG&E

Earlier we had talked about interfacing with P-G&E, too. That also must have been quite a challenge. I'm sure that the P-G&E people were all highly professional. I don't mean to make it sound like a personal thing, but at the same time, there must have been really extreme issues between the Bureau and P-G&E that must have become a part of *your* life.

Klinke: Oh, definitely. Here again I kind of wore two hats. I represented the Bureau at times on the negotiating team when we talked about contractual matters like on reactive losses and the technical aspects of the contract. But I'd be dealing with their upper management, normally, when I'm doing this. On the other hand, from an operating and maintenance standpoint, I had to interface with their department managers, like on communications, like on system protection, like on hydroelectric operations, and I would say I was successful in distinguishing and separating the two. In other words, knowing what the issues were on the negotiating table, I purposely avoided anything that might smack of conflicts when I dealt with the operating people. So really, I was at an advantage by dealing in both areas when I dealt with their department staff. And we got along famously well, I thought. We shared information and experiences.

There's always something that happens in the O&M business, something new or unusual, and the fact that George Anthony was an ex-P-G&E employee—the fellow I worked for originally way back—and Charlie Maservy was a P-G&E dispatcher, I think

they recognized that they had to maintain good working relationships, day-to-day, with them, and not get it on an adversary role. You know, "Because we're Bureau, they're P-G&E, we're natural enemies." That didn't occur. So at the operating level, we were able to get the job done that we had to get done. At the managerial level, let the director (Chuckles) and the chairman or the president of P-G&E argue it out if they had to, but don't get involved with the things at the operating level. And we were able to, over the years, at least while I was there, maintain that kind of distinction.

Petershagen: With this new third party entering the picture, WAPA, did that disrupt relationships? And again, I'm not looking at casting aspersions on people or personalities.

Klinke: No, it just changed relationships. See, up to this time, the Bureau was responsible for marketing and the whole bit. When WAPA came along *they* were responsible for marketing and sales as well as transmission. So here was another entity suddenly moving in.

Impact of WAPA

Now, it turns out that WAPA took over responsibility for administration of the contracts. The Bureau was no longer involved from that standpoint. They operated the powerplants. They released the water, but the basic schedules and the manner of interface with P-G&E was then taken over by WAPA. Now, when that took place, like in our case, a lot of the fellows went from the Bureau over to WAPA, like Gordon Estes. He's been in marketing and sales most of the time, and so he was familiar with the P-G&E contract and had

been dealing with it for years. So he just swung over there, and there was literally no change for him, other than the fact that he was a WAPA person now, instead of a Bureau. But from a contract negotiating standpoint and monitoring standpoint, nothing changed, really, for him. The issue that did come up for him was how WAPA and the Bureau would get along and interface their operations and so on to the advantage of each. And sometimes that's difficult when you get another total new entity in there with their ideas and sometimes the ideas don't always mesh nicely.

Petershagen: Were there any models that could be followed? Was there anyplace else in, I don't know, Bonneville or T-V-A [Tennessee Valley Authority] or someplace where there was kind of this dual responsibility of a marketing agency versus an operating agency?

Klinke: Well, the closest thing, you know, Bonneville is a basic marketing and transmission agency. They had to interface with the Corps of Engineers and other utilities in the Northwest that generated power. They had similar problems in the sense that they had to be conscious of water schedules, which are associated with hydroelectric generation, and so the problems were similar. There wasn't any conscious effort that I was aware of, made during this transition, to go up to Bonneville and say, "Now here's WAPA and the Bureau. Now what kind of words of wisdom can you give us in order to make this a smooth operation?" I'm not aware that that was ever done. The only thing that was ever done was people within the Bureau who could see opportunities for bigger and better things, I felt, got their own personal

ambitions in the way, not always to the benefit of the Bureau.

Petershagen: Well, it's easy to see how personalities in *any* activity sometimes get in the way of whatever that activity might be.

Klinke: Sure. That's people!

Petershagen: Part of what makes us people, right! (Laughter) In your career with the Bureau is there one person, or perhaps maybe two, that you might point at as a mentor?

Klinke: Well, the two people that I already mentioned early on: George Anthony and Art Woods. George—sometimes people didn't quite understand him, but he was extremely knowledgeable in the power operations business. Art Woods, as I mentioned, was a power man. It was very unfortunate that about the early '60s or late '50s, I can't recall exactly, but he developed a brain tumor, and he passed on after he was operated on, and he never did really get back into it. But I learned more from him than anybody. And I highly respected him and George. From that point on I felt I was really on my own.

Petershagen: Okay, I think we're close to the end of my menu, my agenda. If I just say the microphone is open, is there anything that you'd like to say about the Bureau that we haven't covered? You run the risk, of course, of maybe opening that up for a whole new line of questioning! (Laughs) I'll caution you there.

SMUD's Relationship with Reclamation

Klinke: No, I think I've really covered . . . I mean, there's a lot of things that I was involved in, that obviously I haven't talked about—things

that involve SMUD. You know, we only alluded to the fact that I went to work for SMUD, but in fact, they were one of the two utilities that we interconnected with. There were some efforts made in 1950, '51, when Folsom [Dam] was constructed. Folsom was completed in about 1954, as I remember, or '55, somewhere in there. And when we built Folsom, we also constructed the Elverta Substation. That became the single point of delivery, for the first time, to SMUD. Up to that time, power had been wheeled through the P-G&E system to serve SMUD. So when Folsom was completed and Elverta was built, that became a 230 kV interconnection delivery point to the SMUD system. That opened up new problems because we were interfacing with another utility and so we had to interface with them, and it brought up new operating problems, new operating situations that we had to deal with—one of which was rather unusual.

In those days we only had three transmission lines tied to Elverta—one from Cottonwood, one from Folsom, and one from Tracy—serving a load of roughly 300 megawatts. Now the problem became, what happens if you had a line out for maintenance, like the Cottonwood line, and the Elverta-Tracy line tripped, for trouble—lightening or whatever—and you're left with Folsom's generating facility hanging on, trying to support up to a 300 megawatt load when they only had 150 megawatts of generation?

Petershagen: I can hear the turbines bogging down even as you say that! (Laughter)

Klinke: And you may not have the water to support that kind of generation at the time this might occur. So, I got together with the SMUD operating people at that time to discuss the

situation, and it became obvious that we just couldn't have Folsom generators drug down to damned near a halt, if they were left trying to support a huge SMUD load. So we initiated an under-frequency load shedding scheme. What that does is, you have relays spotted at various substations that sense the frequency. And if you had a huge load hanging on a generator like that, it's going to drag the frequency down. In other words, instead of sixty, you might end up with something that's sliding through fifty-five or even fifty cycles because something's got to happen. You've either got to drop load or allow the speed to come back up, or you're going to just drag it right down. So we implemented this under-frequency load shedding scheme.

Petershagen: You're going to hate me for this—I have to stop you for just a minute, I'm sorry.

END OF SIDE A, TAPE 2.
BEGINNING OF SIDE B, TAPE 2.

Petershagen: Dick, you were talking about your dealings with SMUD, so I'll let you just continue with the thoughts you were following.

Klinke: Yeah, I was speaking of the under-frequency load shedding scheme that was implemented to try to avoid damaging any of the Folsom generating facilities in the event that it was left hanging on with just trying to support a SMUD load. And so these frequency relays were installed in key substations, which sensed frequency. And so if this event should ever occur, these relays would then sense the change, open breakers, dropping load, to the point where it would reach, hopefully, a level that the generators could support. And then Sacramento prioritized their load droppings so that the last load, for example, that they'd want to drop would be

the downtown load. They'd drop the residential loads, the outlying loads, but at the very last, affect load that's serving downtown Sacramento and the state offices and such as that. So we worked out a scheme for doing this, and I was given a special award for that program.

To this day, they have under-frequency relays installed in their system, but the situation, electrically, has changed. We've gotten more lines in at Elverta. They've gotten more feeds interconnected with P-G&E, and so on. So we don't have the same problem today as we did in the '50s when we first started serving them.

Petershagen: You mentioned you were given an award for that. Any other major awards along your career?

Meritorious Service Award

Klinke: Well, I was given the Meritorious Service Award by the secretary, which is, I guess, the highest award that the department can offer.

Petershagen: And what was that for? A specific part of your career?

Klinke: Just my general support for the things that I've been describing. I've been involved in a number of major projects, and I guess they finally decided to recognize it. (Laughs)

Petershagen: Somebody noticed along the way, huh?

Klinke: Oh, I was selected by the department, the Secretary of Interior, to go over to the Virgin Islands and inspect their water and power system in the '70s. And that was a very interesting assignment. The governor had requested the secretary to have

somebody come over and look at their system because almost daily they'd have blackouts in the Islands. Obviously, something was wrong so they wanted somebody to go over there and assess that situation. So I was selected to do that. And that was one of the most enjoyable assignments (Chuckles) that I ever had, I think. I spent three weeks going through their system on three different islands—Saint Johns, Saint Croix, and Saint Thomas—and wrote up a report and had my exit interview with the Governor when I left and provided him with my report. I'm not sure whatever happened, whether they still got blackouts or not, but that was an interesting assignment.

Petershagen: Are there any groups that you've associated with that you might want to speak of? You mentioned I-E-E-E. Anything away from the Bureau, though?

Participation in Western Systems Coordination Council

Klinke: Yeah, I was a very active member of the Western Systems Coordinating Council, W-S-C-C. In fact, I started some of their groups. I was a founding member of then what was called, within the Operating Committee. I was the initial member of their Technical Operations Subcommittee.

This W-S-C-C, I don't know if you're familiar with it, is a group of western utilities, both private and government, and they, back when the intertie came in between the Pacific Northwest and California, the 500 kV, that opened up a number of new operating problems—not just for California and Oregon, but the whole western situation. And so they needed a group to deal with those kinds of situations and problems. So all the utilities got together and said, "Well, we'll establish an

executive committee, and then we'll have a hierarchy that'll deal with operations. We'll have another one deal with resources and development. And we'll exchange planning information. We'll know who's building what transmission where and when, and facilitate the overall understanding and operation of the electric system in the western states." And so I was very active in that for this region, from the operations standpoint. (Pause)

Petershagen: That's it? A closing statement you'd like to make perhaps?

Klinke: Well, as I mentioned to begin with, my career with the Bureau was one of excitement, and it's an experience that I appreciate. I don't think it'll ever happen again anywhere because the same situations I don't think will ever occur in terms of new construction, new problems. It was a wonderful experience for a young engineer to grow on, and I really enjoyed it.

Petershagen: Well, it certainly was, by my observation of a couple of hours now (Chuckles), it certainly was an interesting career, one that seems to have offered a tremendous amount of challenge to you. (Klinke: That's right.) It looks as though you met those challenges—the lights and air conditioners come on every day. I guess that was the object of a good share of what you did. (Klinke: Yup.)

Just to satisfy the administrative requirements, I need you once again to acknowledge that this interview is being donated to the government of the United States and becomes U.S. property and will be open for historians and researchers into the Bureau's activities.

Klinke: Yes, I understand.

Petershagen: Thank you very much.

END SIDE 2, TAPE 2
END OF INTERVIEW